

said sequence having a time interval between each pair of successive keystrokes, and

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compiler means operable during each of said time intervals between keystrokes for ~~compiling~~ ^{scanning, parsing and translating} the entered source code.

27. A computer system as recited Claim 26 and comprising
a central processing unit,

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said compiler means normally having control of said central processing unit,

means for passing control of the central processing unit to said entry means after each said striking of any of said keys, and

means for returning control of the central processing unit back to said compiler means after entry into the system of a character code corresponding to the struck key.

28. A computer system as recited in Claim 27 wherein

said entry means comprises editor means for modifying the entered source code, and

said compiler means including means for recompiling at least a portion of the compiled source code in response to modification of the latter by said editor means.

29. A computer system as recited in Claim 28 wherein

said source code comprises a sequence of character codes,

said entry means including interrupt-driven means operable in response to striking any of said keys for interrupting said compiler means and storing in said buffer a character code corresponding to the struck key, and

said entry means including means for returning control to said compiler means after storing said character code.

30. A computer system for the contemporaneous entry and compilation of source code as concurrent processes, and comprising

a compiler normally having control of the system for ~~compiling~~ *scanning, parsing and translating* said source code except while interrupted,

~~a memory including a type-ahead buffer area~~ and a source code storage ~~area~~,

interrupt means for storing character codes in said buffer ~~area~~,

an editor for transferring said character codes from said buffer ~~area~~ to said storage ~~area~~,

means to pass control of said computer system from said compiler to said editor, and

means to return control of said computer system from said editor to said compiler after said editor has completed

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transfer of a character code from said buffer ~~area~~ to said storage ~~area~~.

31. A computer system as recited in Claim 30 and comprising

means for identifying a pause point of source code in the storage ~~area~~ at which point the compiler is to pause until said identification is changed, and

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means for advancing said pause point after a predetermined quantity of new source code has been transferred to the storage ~~area~~ so as to permit the compiler to compile said new source code.

32. A computer system as recited in Claim 30 and comprising

means to initialize the compiler prior to compiling the source code,

said editor including means to modify the source code, and

means to reinitialize the compiler after modification of the source code to cause the compiler to recompile the modified source code.

33. A computer system as recited in Claim 30 and comprising

a terminal having keys, and

means actuating said interrupt means in response to striking at least one of said keys.

34. A computer system as recited in Claim 30 wherein

said editor includes means to modify the source code and includes means for controlling the extent of the source code compiled by said compiler.

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35. A computer system as recited in Claim 34 wherein

said editor includes means for controlling reinitialization of the compiler to cause the latter to recompile the source code.

36. A computer system for contemporaneous entry and compilation of source code as concurrent processes, and comprising

buffer means for storing source code,

keyboard means having keys,

input means for entering source code into said buffer means and for editing source code previously entered therein,

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a compiler for performing at least lexical and syntactic analyses of the source code as the latter is entered into said buffer means and normally having control of the system,

means actuatable to pass control of the system to the input means in response to operation of said keyboard means,

limiting means for preventing the compiler from attempting to analyse source code beyond a pause location in the buffer means determined by said input means, and

means to return control of the system to the compiler upon completion of each entering and editing operation.

a' 37. A computer system as recited in Claim 36 wherein

said limiting means includes means for identifying said pause location at which location the compiler is to pause, and

means for advancing said pause location after a predetermined quantity of new source code has been entered into the buffer means system so as to permit the compiler to analyse said new source code.

38. A computer system as set forth in Claim 36 and comprising

means to initialize the compiler before start of the compilation,

means for modifying a previously compiled portion of the source code, and

means responsive to said modifying means to reinitialize said compiler for recompilation of at least said modified previously compiled portion of the source code.

39. A computer system for the compilation of source code concurrently as the latter is entered at a console keyboard, said system comprising

a central processing unit,

a memory including a buffer means,

a console having a keyboard,

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compiler means for parsing the source code in said buffer means and normally controlling said central processing unit,

interrupt means responsive to actuation of a key at said keyboard for interrupting said compiler means and for entering a source code byte into said buffer means,

said interrupt means including means for passing control of the central processing unit to said interrupt means after each actuation of a key at said keyboard, and

means for passing control of the central processing unit back to the compiler means after each entry of a source code byte into the buffer means.

40. A computer system as recited in Claim 39 wherein said interrupt means includes means for controlling the extent of the source code to be parsed by the compiler means.

41. A computer system as recited in Claim 40 wherein said interrupt means includes editor means for modifying the

entered source code, and

means responsive to modification of the source code by the editor means, for causing the compiler means to recompile at least a portion of the source code.

42. A computer system as recited in Claim 41 wherein

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said extent controlling means comprises means for identifying a pause location in said source code at which location the compiler is to pause until said identification is changed by said editor means, and

means for advancing said pause location after new source code has been entered so as to permit the compiler means to parse said new source code.

43. A computer system for concurrent compilation of source code as the latter is entered at a console keyboard, said system comprising

a processing unit,

a console having a keyboard,

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~~memory~~ buffer ~~means including a type-ahead area~~ and a storage area,

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interrupt means responsive to activation of said keyboard for entering source code into the ^{buffer}~~type-ahead area~~,

editor means for taking source code from said ^{buffer}~~type-ahead area~~, entering said source code in the storage ~~area~~ and modifying

the entered source code,

said editor means performing an individual editing operation in response to the actuation of a sequence of one or more keys at said keyboard,

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compiler means for ^{translating} ~~compiling~~ said entered source code and normally controlling said processing unit,

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means for passing control of the processing unit from said compiler means to said editor means after each actuation of said key sequence at said keyboard, and

means for passing control of the processing unit back to said compiler means after each said individual editing operation by said editor means.

44. A computer system as recited in Claim 43 wherein

said editor means includes means for controlling the extent of the entered source code to be compiled by the compiler means.

45. A computer system as recited in Claim 43 wherein said compiler means comprises means to recompile at least a portion of the source code after the latter is modified by the editor means.

46. A computer system as recited in Claim 44 wherein

said controlling means comprises means for identifying a pause location in said source code at which location the compiler is to pause until said identification is changed by said editor means, and

means for advancing said pause location after new source

code has been entered so as to permit the compiler means to compile said new source code.

47. A computer system for concurrent entry and compilation of a source program, and comprising

a' console means for input of successive characters constituting said source program,

memory means for storing said source program and also storing a compiler and an interrupt service routine having a memory address,

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B ~~said memory means including a type-ahead buffer area and a storage area,~~

a central processing unit having an interrupt input, a program counter, and means responsive to activation of said interrupt input to load into said program counter said address of said interrupt service routine,

means to initialize the compiler,

said compiler normally having control of the central processing unit for compiling an initial portion of the source program as the latter is entered into said memory means,

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said compiler including means for translating said initial portion ~~partial~~ of the source program into object code,

means responsive to operation of said console means to

activate said interrupt input and thereby pass control of the central processing unit from said compiler to said interrupt service routine,

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said interrupt service routine including means for entering input characters in said buffer ~~area~~ and editor means for transferring said input characters from said buffer ~~area~~ to selected locations of said storage ~~area~~ and for executing editing commands modifying the stored source program,

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said editor means including means for designating a location in the stored source program at which location the compiler is to pause while awaiting the input of a further portion of the source program,

said compiler including a loop for execution when the compiler reaches said designated pause location and repeatedly executed until said location is changed,

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said editor means advancing said pause location as additional portions of the source program are entered in said storage ~~area~~,

said interrupt service routine including means to return control of the central processing unit to the compiler upon completion of either the storage of at least one input character or the execution of an editing command.

48. A computer system as recited in Claim 47 wherein

said editor means includes means for modifying a source program portion which has previously been compiled by the compiler, and

means to reinitialize the compiler to cause the latter to recompile at least a part of the source program after said compiled portion has been modified.

49. A computer system as recited in Claim 47 wherein

said console means includes a display screen and a keyboard having keys,

a' said editor means including means to display on said screen a portion of the source code stored in said memory means,

a cursor to designate on the screen the portion of the source program to be affected by an operation of the editor,

means to move said cursor on the screen in response to the striking of predetermined keys of said keyboard,

means to move said pause location to a point preceding the program location designated by the cursor after the cursor has been moved in an upward direction corresponding to a direction toward the beginning of the source program,

means to initialize the compiler before the start of the compilation, and

means to reinitialize the compiler after the cursor has been moved in said upward direction, thereby causing the compiler to recompile at least a portion of the source code.

50. A computer system for concurrent entry and compilation of a program having source code, and comprising

a console having a keyboard for input of successive characters constituting the source code of said program,

a memory for storing said source code and also storing a compiler and an editor,

said memory including a type-ahead buffer area and a source text storage ~~area~~,

means responsive to actuation of said keyboard to enter characters into said buffer ~~area~~,

said editor including means for successively transferring said characters from said buffer ~~area~~ to said storage ~~area~~ to store therein a portion of the program and also including means for executing editing commands,

a central processing unit,

means to initialize the compiler,

said compiler normally having control of the central processing unit for parsing the source program portion stored in said memory means,

means to pass control of the central processing unit from said compiler to said editor,

means for designating a location in the source program at which point the compiler is to pause while awaiting the input of a further portion of the source program,